C6174
Log Data Report

Borehole Information:

Borehole:	C6174		Site:	216-S-6 Crib	
Coordinates (WA St Plane)		GWL[1] (ft):	None	GWL Date:	05/21/08
North (m)	East (m)	Drill Date	TOC[2] Elevation	Total Depth (ft)	Type
Unknown	Unknown	04/23/08	Unknown	99.5	Cable Tool

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded Steel	0.6	8 5/8	7 5/8	1/2	0	99

Borehole Notes:

The well site geologist reported both depth to bottom and depth of casing. A logging engineer measured casing diameter employing a steel tape and rounding to the nearest 1/16-in. The zero reference is the ground surface.

Logging Equipment Information:

Logging System:	Gamma 1L		Type: / Serial No.:	SGLS HPGe (60%) / H47TP32211A
Effective Calibration Date:	04/17/08	Calibration Reference:	HGLP-CC-030	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 1C		Type: / Serial No.:	HRLS HPGe / 39A314
Effective Calibration Date:	11/26/07	Calibration Reference:	HGLP-CC-030	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 4H with AmBe source		Type: / Serial No.:	NMLS / H310700352
Effective Calibration Date:	11/06/07	Calibration Reference:	HGLP-CC-021	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 4H without AmBe source		Type: / Serial No.:	PNLS / H310700352
Effective Calibration Date:	N/A	Calibration Reference:	N/A	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4 Repeat
Date	4/23/08	4/23/08	4/23/08	4/23/08
Logging Engineer	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	0.0	9.0	18.0	50.0
Finish Depth (ft)	10.0	19.0	99.0	60.0
Count Time (sec)	100	20	100	100
Live/Real	R	R	R	R
Shield (Y/N)	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0

Log Run	1	2	3	4 Repeat
Log Speed (ft/min)	N/A	N/A	N/A	N/A
Pre-Verification	AL031CAB	AL031CAB	AL031CAB	AL031CAB
Start File	AL031000	AL031011	AL031023	AL031105
Finish File	AL031010	AL031022	AL031104	AL031115
Post-Verification	AL031CAA	AL031CAA	AL031CAA	AL031CAA
Depth Return Error (in.)	N/A	N/A	N/A	Low 1
Comments	No fine gain adjustment made	Dead Time > 40%	No fine gain adjustment made	Repeat section

High Rate Logging System (HRLS) Log Run Information:

Log Run	5	6 Repeat		
Date	04/23/08	04/23/08		
Logging Engineer	Spatz	Spatz		
Start Depth (ft)	9.0	15.0		
Finish Depth (ft)	19.0	17.0		
Count Time (sec)	300	300		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	1.0	0.5		
Log Speed (ft/min)	N/A	N/A		
Pre-Verification	AC190CAB	AC190CAB		
Start File	AC190000	AC190011		
Finish File	AC190010	AC190015		
Post-Verification	AC190CAA	AC190CAA		
Depth Return Error (in.)	N/A	0		
Comments	No fine gain adjustment made	Repeat Section		

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	7	8		
Date	04/24/08	04/24/08		
Logging Engineer	Pearson	Pearson		
Start Depth (ft)	0.0	20.0		
Finish Depth (ft)	99.0	30.0		
Count Time (sec)	15	15		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	0.25	0.25		
Log Speed (ft/min)	N/A	N/A		
Pre-Verification	DHD42CAB	DHD42CAB		
Start File	DHD42000	DHD42397		
Finish File	DHD42396	DHD42437		
Post-Verification	DHD42CAA	DHD42CAA		
Depth Return Error (in.)	N/A	N/A		
Comments	None	Repeat Section		

Passive Neutron Logging System (PNLS) Log Run Information:

Log Run	9	10 Repeat		
Date	04/24/08	04/24/08		
Logging Engineer	Pearson	Pearson		
Start Depth (ft)	0.0	10.0		

Log Run	9	10 Repeat		
Finish Depth (ft)	99.0	20.0		
Count Time (sec)	60	60		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	1.0	1.0		
Log Speed (ft/min)	N/A	N/A		
Pre-Verification	DHD52CAB	DHD52CAB		
Start File	DHD52000	DHD52100		
Finish File	DHD52099	DHD52110		
Post-Verification	DHD52CAA	DHD52CAA		
Depth Return Error (in.)	N/A	Low 1.0		
Comments	None	Repeat Section		

Logging Operation Notes:

Data for SGLS and HRLS were collected using Gamma 1, HO 68B-3574. Pre- and post-survey verification measurements for the SGLS were acquired in the Amersham KUTh-118 field verifier. Pre- and post-survey verification measurements for the HRLS were acquired in the Cs-137 1013 field verifier. A centralizer was installed prior to logging for SGLS and HRLS.

Data for NMLS and PNLS were collected using Gamma 4, HO 68B-3573. Pre- and post-survey verification measurements for NMLS were acquired in the standard field verifier. Pre- and post-survey verification measurements for PNLS were acquired next to the AmBe source. A centralizer was installed on the sonde.

Analysis Notes:

Analyst:	M.J. Legler	Date:	06/16/08	Reference:	GJO-HGLP 1.6.3, Rev. 0

The pre- and post-survey verification spectra met the acceptance criteria for the established systems. A casing correction for 1/2-in. thick casing was applied to spectral log data (SGLS and HRLS) from ground surface to 99 ft.

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G1LApr08.xls for SGLS and G1CNov07.xls for HRLS using efficiency functions and corrections for casing and dead time as determined by annual calibrations.

In areas where dead time is greater than 40 percent, HRLS data is substituted for the SGLS data. Moisture data is presented in counts per second because there is no calibration data for a 7 5/8-in. inner diameter casing. Since calibration for passive neutron is not required, data is reported in counts per second.

Results and Interpretations:

Cs-137 was detected in this borehole at 1 ft, 6-41 ft, 43-46 ft, 50–52 ft, 55 ft, 94 ft, and 96–99 ft, with a maximum concentration at approximately 13,000 pCi/g at 16 ft.

A zone of greater that 40% dead time from 10–18 ft was encountered with the SGLS. The data from the SGLS in this area is considered unreliable and HRLS data should be used in this zone.

Moisture data indicates some variability. Passive neutron data indicates no evidence of neutron activity.

The KUT plots indicate good repeatability.

List of Log Plots:

Depth Reference is ground surface

Manmade Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma & Dead Time
Passive Neutron & Moisture
Manmade Repeat Section
Repeat Section of Natural Gamma Logs
Moisture Repeat Section

[1] GWL – groundwater level
[2] TOC – top of casing

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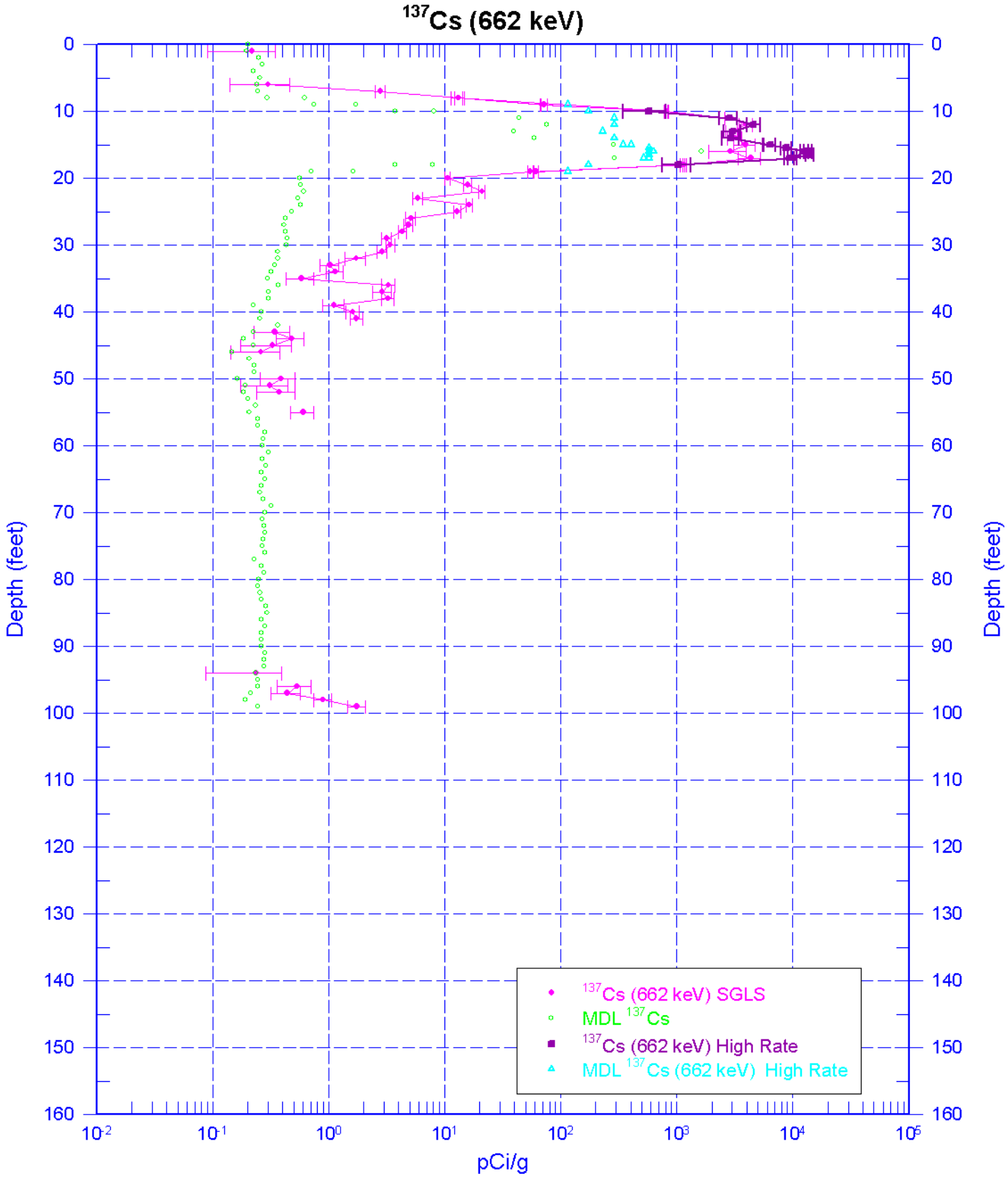
Manmade Radionuclides



Zero Reference - Ground Surface

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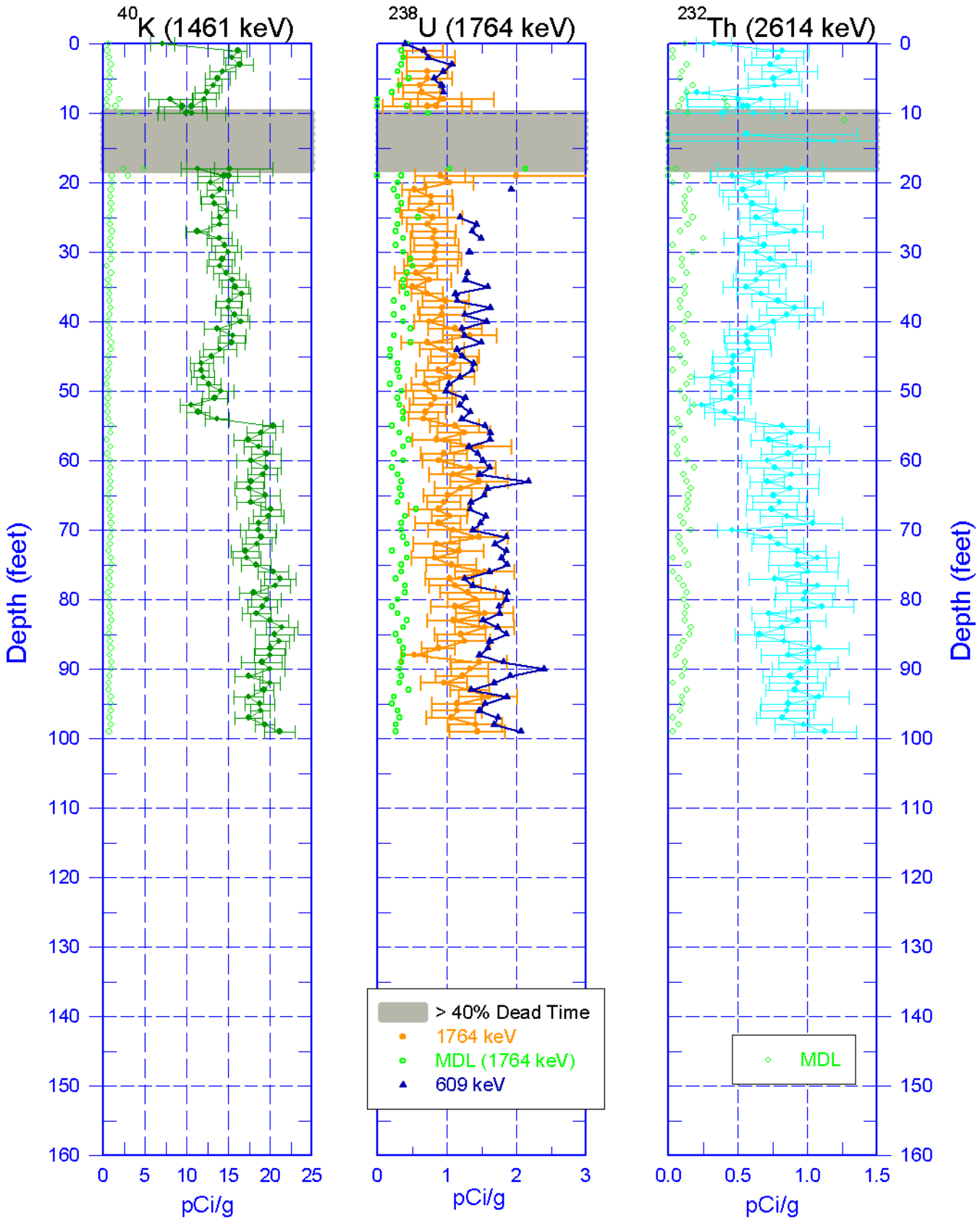
C6174
Natural Gamma Logs



Zero Reference - Ground Surface

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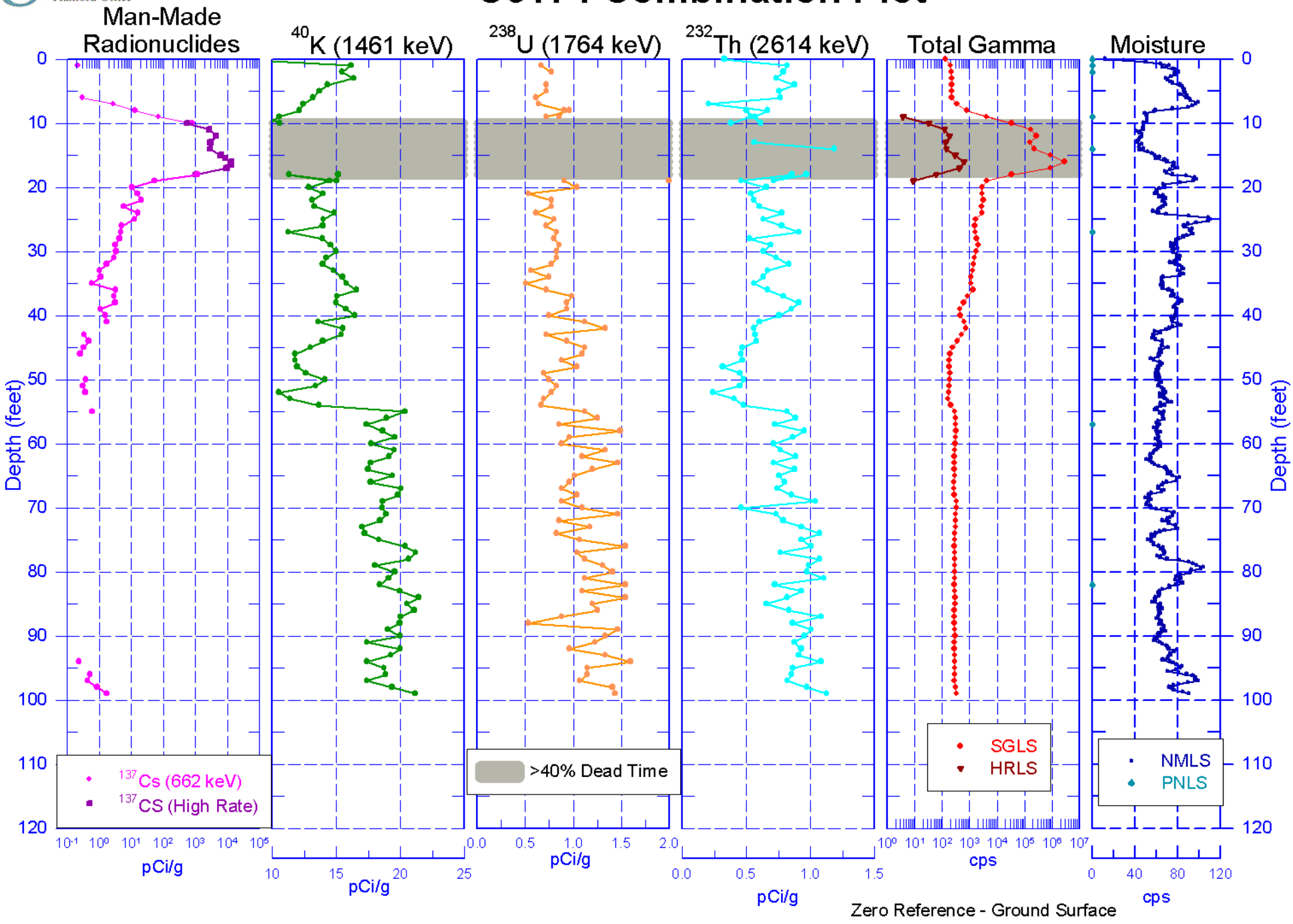
C6174 Combination Plot



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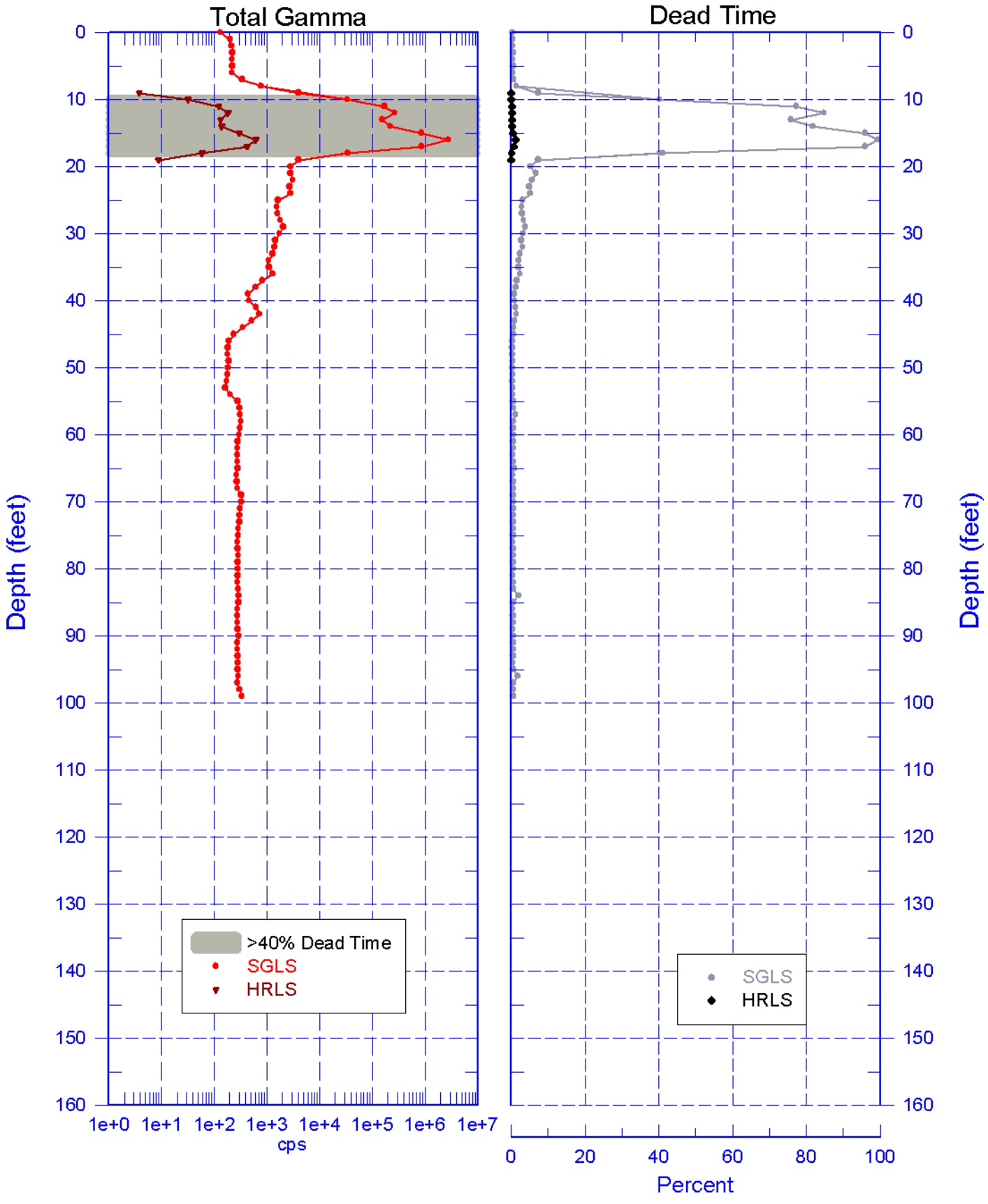
Total Gamma & Dead Time



Reference - Ground Surface

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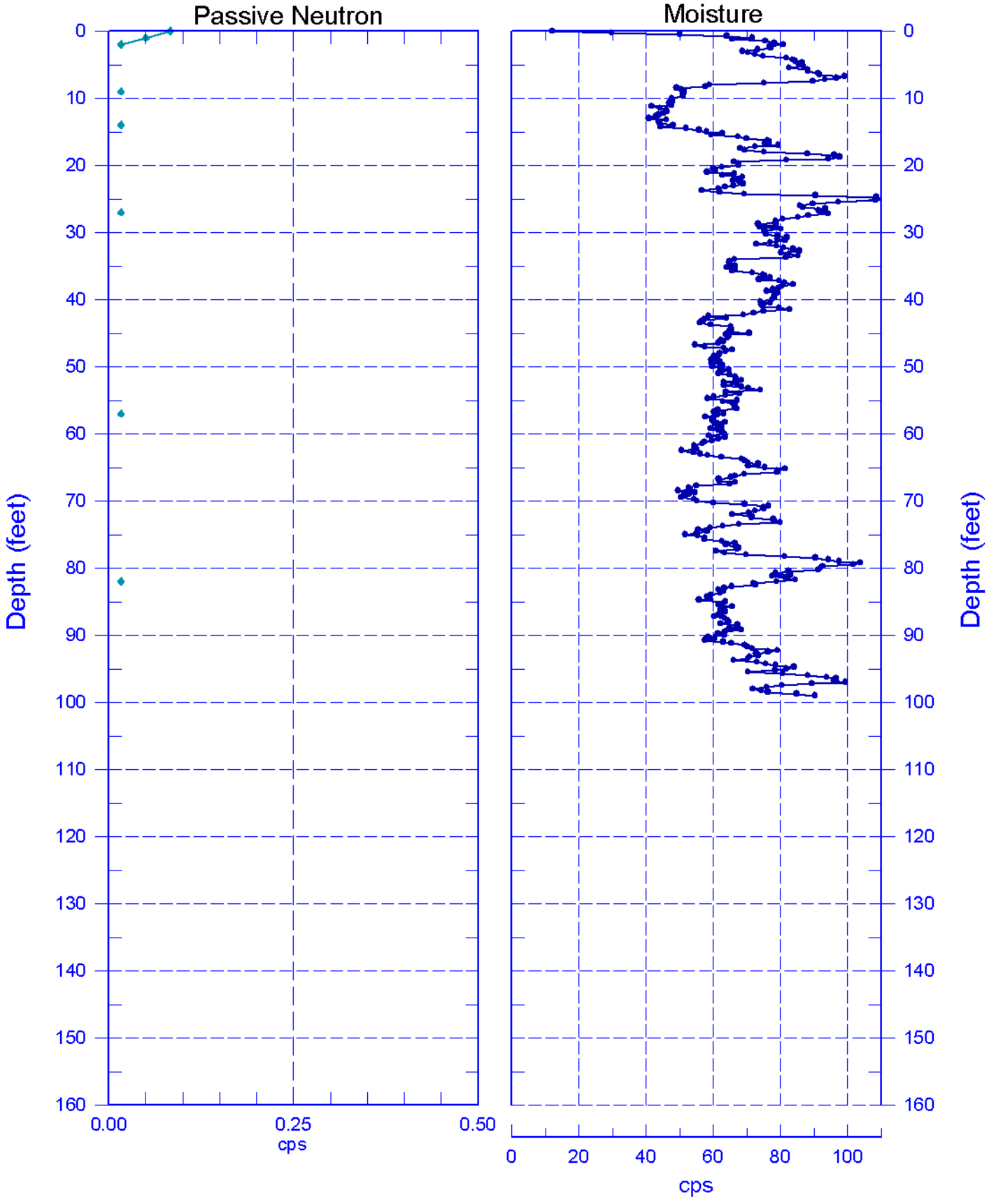
Passive Neutron & Moisture



Reference - Ground Surface

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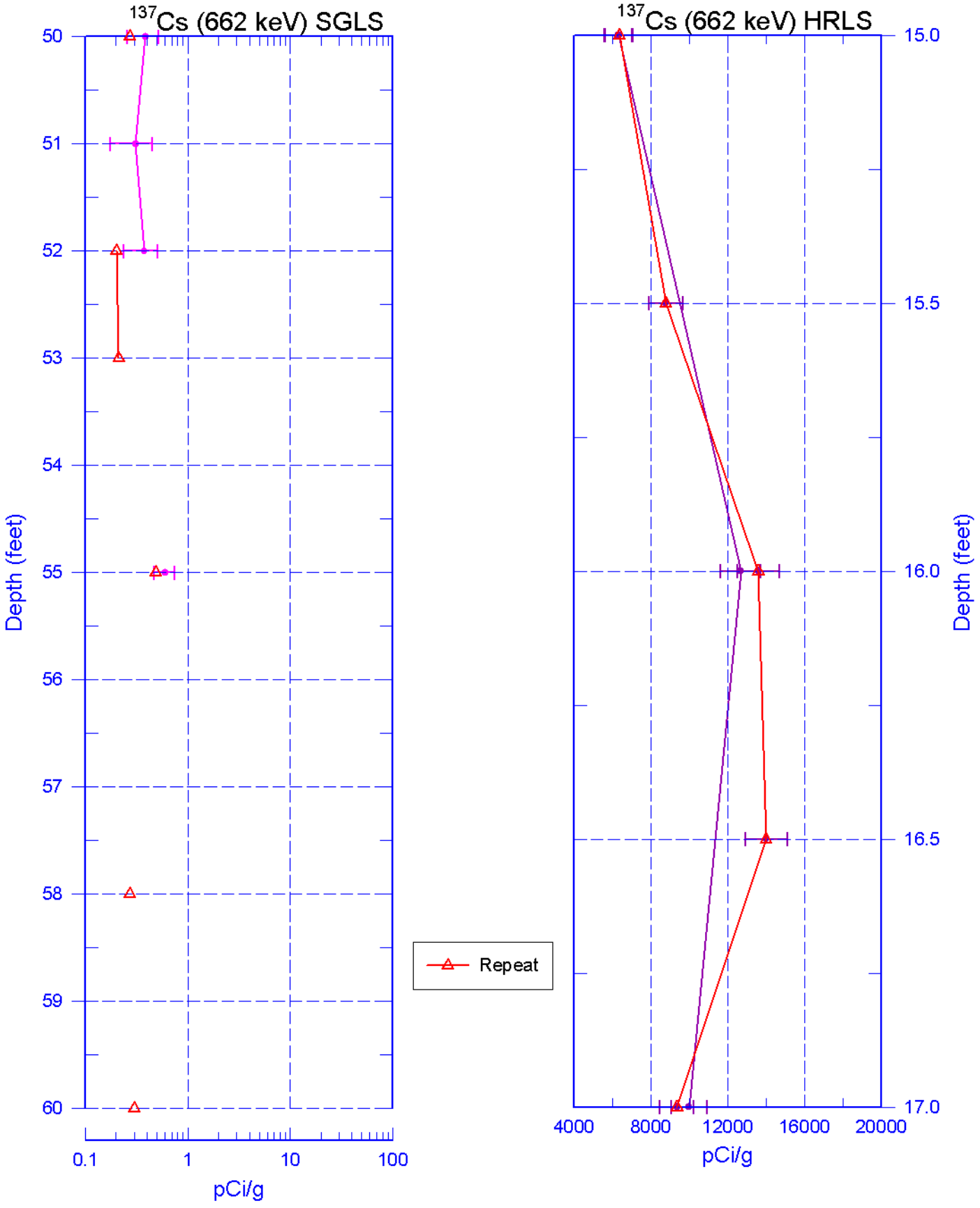
Manmade Repeat Section



Reference - Ground Surface

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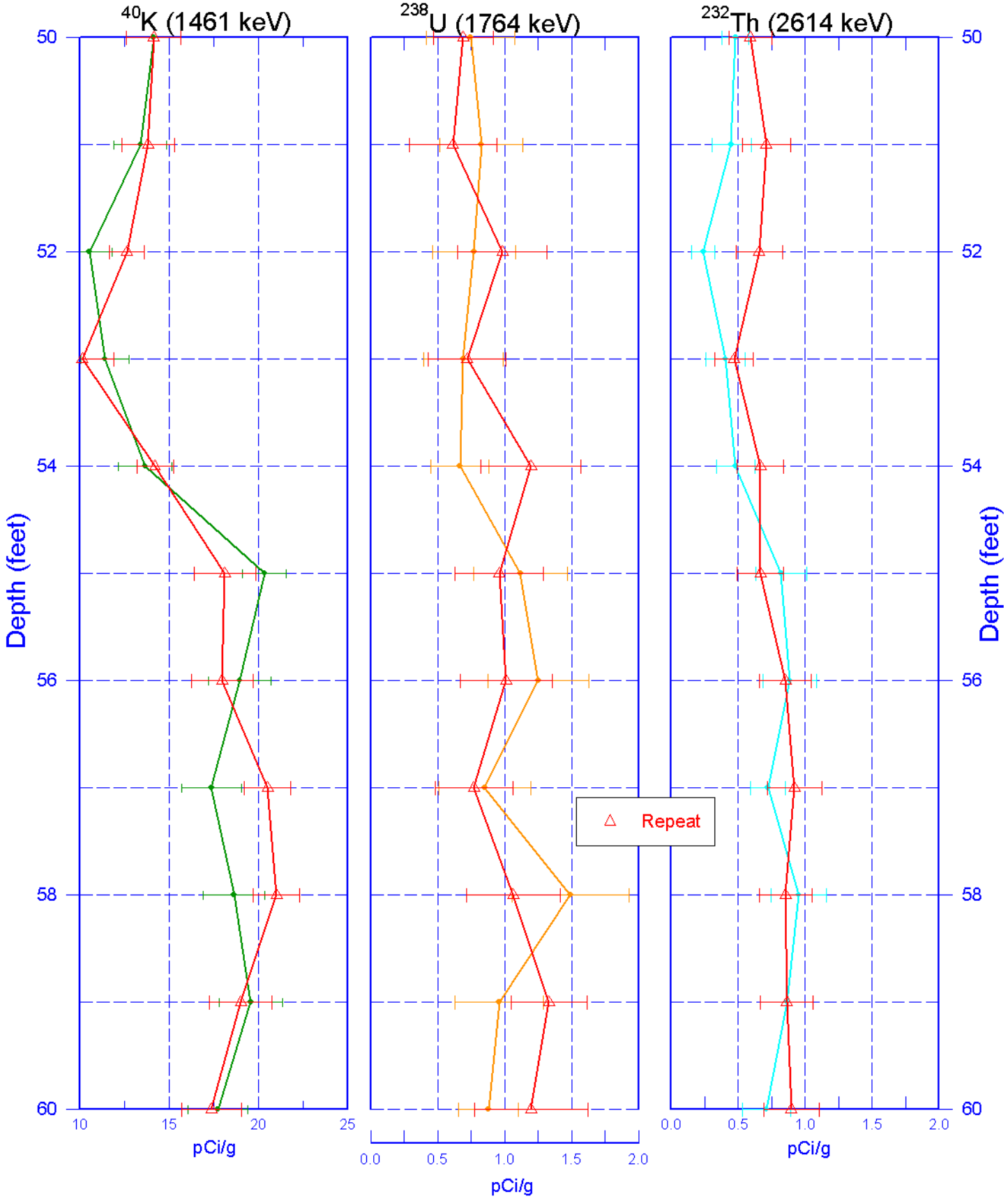
Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface

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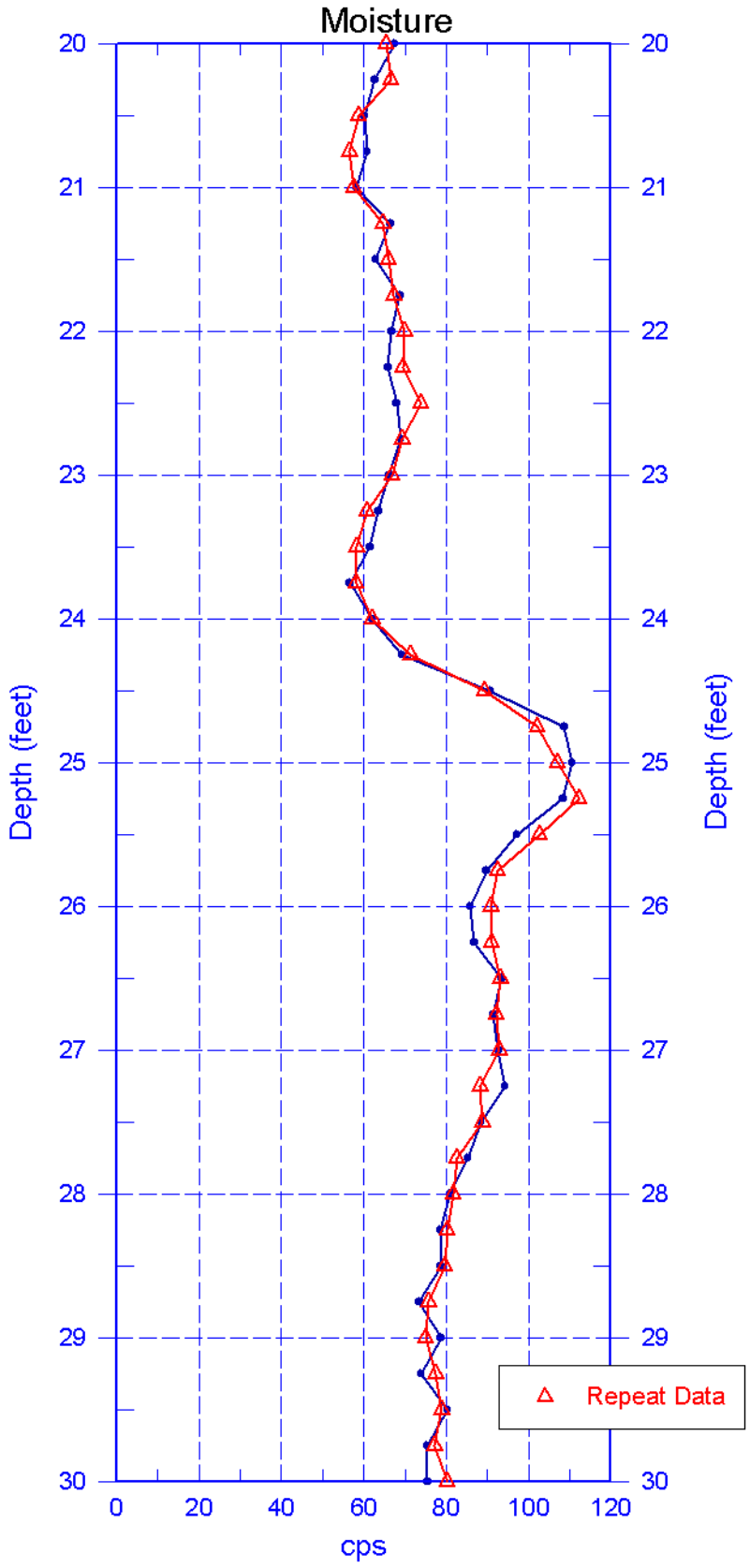
C6174
Moisture Repeat Section



Reference - Ground Surface